# NATURAL RESOURCES CONSERVATION SERVICE
# CONSERVATION PRACTICE STANDARD

# FILTER STRIP
# (Acres)
# CODE 393

## DEFINITION

A strip or area of permanent herbaceous vegetation situated between cropland, grazing land, or disturbed land (including forest land) and environmentally sensitive areas.

## PURPOSE

To reduce sediment, particulate organics, and contaminants adsorbed by sediment

To reduce dissolved contaminants in runoff

To serve as Zone 3 of a Riparian Forest Buffer, Practice Standard 391

To restore, create or enhance herbaceous habitat for wildlife and beneficial insects

To maintain or enhance watershed functions and values

## CONDITIONS WHERE PRACTICE APPLIES

This practice applies:

(1) in areas situated below cropland, grazing land, or disturbed land (including forest land)

(2) where sediment, particulate organic matter and/or dissolved contaminants may leave these areas and are entering environmentally sensitive areas;

(3) in areas where permanent vegetative establishment is needed to enhance wildlife and beneficial insects, or maintain or enhance watershed function.

## CRITERIA

### General Criteria Applicable to all Purposes

Overland flow entering the filter strip shall be sheet flow. Concentrated flow areas shall be handled to create sheet flow conditions prior to entering the filter strip.

Pennsylvania noxious weeds will not be established in the filter strip and will be controlled if present.

### Additional Criteria to Reduce Sediment, Particulate Organics, and Contaminants Absorbed by Sediment and to Reduce Dissolved Contaminants in Runoff

Filter strip flow length(generally the width of the filter strip) shall be determined based on field slope percent and length, and filter strip slope percent, erosion rate, amount and particle size distribution of sediment delivered to the filter strip, density and height of the filter strip vegetation, and runoff volume associated with erosion producing events. The minimum flow length for this purpose shall be 20 feet. Filter strip location requirements:

a) The filter strip shall be located along the downslope edge of the runoff producing area. The up slope boundary of filter strips shall meet the contour specification (330) with respect to deviation from the contour.

b) The ratio of the drainage area to the filter strip area shall be less than 60:1, based on the Revised Universal Soil Loss Equation (RUSLE) rainfall factors for Pennsylvania.

c) Average annual sheet and rill erosion rate (calculated using RUSLE) above the filter strip shall be less than 10 tons per acre per year.

The filter strip shall be established to permanent herbaceous vegetation consisting of a single species or a mixture of grasses, legumes and/or other forbs adapted to the soil, climate, and nutrients, chemicals, and practices used in the current management system. Species selected shall have stiff stems and a high stem density near the ground surface. Stem density shall be such that the stem spacing does not exceed 1 inch.

**Additional Criteria to Reduce Dissolved Contaminants in Runoff**

Effectiveness of filter strips for this purpose will vary with the nature of the dissolved contaminants, infiltration rate, type and species of vegetation and flow length. Minimum flow length will be 30 feet. This is in addition to the flow length determined for reducing sediment, particulate organics, and sediment-adsorbed contaminant loadings in runoff.

**Additional Criteria to Serve as Zone 3 of a Riparian Forest Buffer, Practice Standard 391**

Except for the location requirements, the criteria given in "Additional criteria to reduce sediment, particulate organics, and contaminants adsorbed by sediment" apply to this purpose.

If concentrated flows are entering Zone 3, they must be dispersed by spreading devices or other means.

**Additional Criteria to Restore, Create, or Enhance HerbaceousH for Wildlife and Beneficial Insects**

If this purpose is intended in combination with one or more of the previous purposes, then the minimum criteria for the previous purpose(s) must be met. Additional filter strip flow length devoted to this purpose must be added to the length required for the other purpose(s).

Any addition to the flow length for wildlife or beneficial insects shall be added to the downhill slope of the filter strip. Vegetation to enhance wildlife may be added to that portion of the filter strip devoted to other purposes to the extent they do not detract from its primary functions.

Plant species selected for this purpose shall be for permanent vegetation adapted to the wildlife or beneficial insect population(s) targeted.

The filter strip shall not be mowed during the nesting season of the target wildlife.

Livestock and vehicular traffic in the filter strip shall be excluded during the nesting season of the target species.

**Additional Criteria to Maintain or Enhance Watershed Functions and Values**

Filter strips shall be strategically located to enhance connectivity of corridors and non-cultivated patches of vegetation within the watershed.

Filter strips should be strategically located to enhance aesthetics of the watershed.

## CONSIDERATIONS

Filter strips should be strategically located to reduce runoff, increase infiltration and ground water recharge throughout the watershed.

Filter strips to enhance the watershed function should be strategically located to intercept contaminants thereby enhancing the water quality of the watershed.

Consider using this practice to enhance the conservation of declining species of wildlife, including those that are threatened or endangered.

Consider using this practice to protect National Register listed or eligible (significant) archaeological and traditional cultural properties from potential damaging contaminants.

Filter strip size should be adjusted to a greater flow length, as needed, to accommodate harvest and maintenance equipment.

## PLANS AND SPECIFICATIONS

Based on this standard, plans and specifications shall be prepared for each specific field site where a filter strip will be installed. A plan includes information about the location, construction sequence, vegetation establishment, and management and maintenance requirements.

Specifications will include:

a) Length, width, and slope of the filter strip to accomplish the planned purpose (length refers to flow length across the filter strip).

b) Species selection and seeding or sprigging rates to accomplish the planned purpose

c) Planting dates, care, and handling of the seed to ensure that planted materials have an acceptable rate of survival

d) A statement that only viable, high quality, and regionally adapted seed will be used

e) Site preparation sufficient to establish and grow selected species

## OPERATION AND MAINTENANCE

For the purposes of filtering contaminants, permanent filter strip vegetative plantings should be harvested as appropriate to encourage dense growth, maintain an upright growth habit, and remove nutrients and other contaminants that are contained in the plant tissue.

Control Pennsylvania noxious weeds and other undesirable weed species

Prescribed burning may be used to manage and maintain the filter strip when an approved burn plan has been developed.

Inspect the filter strip after storm events and repair any gullies that have formed, remove unevenly deposited sediment accumulation that will disrupt sheet flow, reseed disturbed areas, and take other measures to prevent concentrated flow through the filter strip

Apply supplemental nutrients as needed to maintain the desired species composition and stand density of the filter strip.

To maintain or restore the filter strip's function, periodically regrade the filter strip area when sediment deposition at the filter strip-field interface jeopardizes its function, and then reestablish the filter strip vegetation, if needed. Destruction of vegetation within the portion of the strip devoted to that purpose, should be minimized by regrading only to the extent needed to remove sediment and fill concentrated flow areas.

Grazing shall not be permitted in the filter strip unless a managed grazing system meeting appropriate NRCS Standards and Specifications is being implemented. Grazing, under this system will only be permitted when soil moisture conditions support livestock traffic without excessive compaction.

## REFERENCES

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.